

REMARKS

Claims 5, 7, 10, 13, 14, 15 and 19 are hereby amended, while Claims 6, 8 and 9 are cancelled. Reconsideration of the pending claims is requested.

As to the Section 112 rejection, Claims 7, 10, 13 and 19 are amended, and Claims 6, 8 and 9 are cancelled. Withdrawal of the objections is requested.

As to the prior art rejections, the claims are believed patentably distinguishable therefrom. The current rejection is based upon Hays, Kataoka and Piety.

Specifically, Claim 5 is clarified to specify that the mechanical seal includes seal rings with a fluid chamber disposed adjacent the seal rings. The passages supply passage fluid to the fluid chamber and maintain the operating temperature of the seal rings. The temperature of this passage fluid is detected in addition to the bearing temperatures wherein the analyzing step determines the abnormal operating conditions indicated when the temperature increases exceed an acceptable amount compared to the last temperature detection period.

Hays, however, differs therefrom. Specifically, Hays only discloses relative to the mechanical seal that an optional seal leak detector 94 is provided. It is noted this leak detector is only examined as a method of verifying pump cavitation (Col. 23, lines 39-65) wherein if a flowmeter indicates a flow rate less than the original rate, then the seal leakage sensor data is gathered and examined. There is no suggestion of monitoring temperature in this process since it would have nothing to do with a loss of flow rate, and there is no suggestion of obtaining temperature readings of a fluid supplied to a seal chamber.

As to the data logging device 142, the undersigned questions whether this is provided for any temperature detection. Col. 18, lines 1-3 make no reference of a temperature detector as the configuration for the device 142. Further, the disclosed machine sensors referenced in Col. 15

only seem to be machine mounted sensors not used on a portable detector. In that the machine and process sensors seem to be affixed in place, the logging device 142 is not believed to be a temperature sensing device. Thus, Hays is not believed to disclose the various steps of Claim 5.

As to Piety, this patent does not disclose collecting temperature data of bearings and a flow passage of a mechanical seal, and thus, does not cure the deficiencies of Hays or Kataoka discussed below.

As to Kataoka, this patent does not disclose using temperature monitoring to indicate abnormal operating conditions when the increases exceed an acceptable amount. Kataoka specifically focuses on analyzing high acoustic emissions to determine the operating state. This patent only secondarily references in col. 4, lines 2-3 a temperature change but it was the noise level evaluation that was used to identify the problem. Thus, Kataoka is not believed to disclose, teach or suggest using temperature monitoring in a mechanical seal, much less in a fluid passage as claimed to identify an abnormal operating condition of a seal when the temperature increases exceed an acceptable amount. As such, Kataoka is not believe to cure the deficiencies of Hays and Piety.

These patents are still not believed to disclose the claimed method of monitoring bearing temperatures and the temperature associated with a passage fluid in a fluid passage communicating with a seal chamber. This does not constitute a mere changing of a location, but in fact monitors a different type of criteria namely a fluid associated with relatively rotatable seal rings.

As to Japikse, this decision relates to apparatus claims and is not believed to be applicable to method claims where the method has been modified to monitor an associated fluid of a mechanical seal.

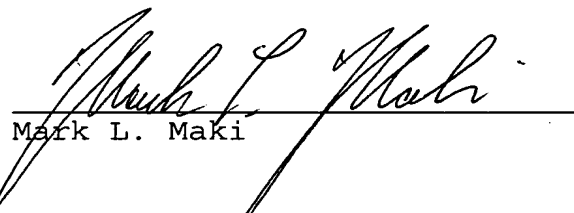
As such, Claim 5 and dependent Claims 7, 10 and 11-14 are all allowable.

As to Claim 14, it is noted that the passage fluid is the process fluid and an increase in temperature of the passage fluid is caused by heat generation of the seal rings. This emphasizes the heat of the passage fluid results from the seal rings, and the prior art is not believed to disclose monitoring the passage fluid in a passage to determine the performance of the seal rings which are separate from the passage.

As to Claim 15, this claim is amended to emphasize features similar to Claim 5. In particular, this claim also claims that the passage fluid maintains the operating temperature of the seal rings, while the method thereby detects and analyzes this fluid temperature. The analyzing step is performed to identify abnormal temperature increases which exceed a defined amount which increase in the passage fluid temperature is caused by heat generation from the seal rings. This method as claimed is not believed to be disclosed by Hays, Piety and Kataoka as discussed above, such that Claims 15-22 are all believed allowable.

Further and favorable consideration of this application is solicited.

Respectfully submitted,

  
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